UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/560,629	12/12/2005	Takuma Yano	13006.116	7151

7590 05/17/2007

Fildes & Outland
Suite 2
20916 Mack Avenue
Grosse Pointe Woods, MI 48236

EXAMINER	
TOSCANO, ALICIA	
ART UNIT	**PAPER NUMBER**
1712	

MAIL DATE	DELIVERY MODE
05/17/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/560,629	YANO ET AL.	
	Examiner	Art Unit	
	Alicia M. Toscano	1712	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 December 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-11* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-11* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *12/12/05*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Priority

1. Should applicant desire to obtain the benefit of foreign priority under 35 U.S.C. 119(a)-(d) prior to declaration of an interference, a certified English translation of the foreign application must be submitted in reply to this action. 37 CFR 41.154(b) and 41.202(e).

Failure to provide a certified translation may result in no benefit being accorded for the non-English application.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 2, 3, 4 and 6 are rejected under 35 U.S.C. 102(b) as being anticipated by Miyamoto (JP 2001-151871-English translation included).

Miryamoto discloses crosslinking a lactic acid based polyester with isocyanate groups (abstract). The carboxyl groups of the polylactic acid are reacted, or blocked, with an epoxy compound which contains hydroxyl groups in order to increase the hydroxyl groups of the polyester [0010]. Example 1 discloses the use of composition of 200 weight parts lactide, 1.28 parts glycerol, 1.6011 succinic acid, 1.184 epoxy, 3.36 additional succinic acid and 2.4864 additional epoxy, which is 0.02 wt% epoxy, thusly meeting all the limitations of Claims 1, 2 and 4. 0.672 wt parts of isocyanate are added

to 100 parts of the resultant polyester [0024], meeting the limitations of Claim 3. The polyester is endcapped with the epoxy, or first mixed with the epoxy, and then mixed with the isocyanate, as disclosed in Example 1, meeting the limitations of Claim 6.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims 7-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyamoto in view of Kimura (5618911).

Miyamoto includes elements as set forth above. Miyamoto discloses the use of the composition of inks, adhesives, paints and coatings [0029], Miyamoto does not disclose the composition to be used for molded items or foams.

Kimura discloses endcapped polylactic polymer compositions. Said compositions are used for paints, adhesives, inks and molded articles such as fibers,

films and sheets (Column 10 Lines 51-67). Kimura thusly teaches the compositional uses to be functionally equivalent for polylactic acid compositions.

It would have been obvious to one of ordinary skill in the art at the time of the invention to include in Miyamoto the use of the composition for molded articles such as fibers, films and sheets, as taught by Kimura, since these are recognized in the art as being functionally equivalent uses to that of paints, adhesives and inks.

4. Claims 5 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyamoto and Kimura in view of Kitazono (JP 2002338796-English translation included).

Miyamoto and Kimura include elements of the invention as discussed above. Miyamoto and Kimura do not include the use of a layered silicate in the composition.

Kitazono discloses biodegradable polyester material blended with layered silicates (abstract). The biodegradable polyester may be polylactic acid [0008]. Inclusion of the layered silicate improves the gas barrier properties of the composition (abstract and [0005]).

It would have been obvious to one of ordinary skill in the art at the time of the invention to include in Miyamoto and Kimura the use of layered silicates, as taught by Kitazono, in order to improve the gas barrier properties of the composition.

5. Claims 1-5 and 7-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ueda (JP 2003-147182- English translation included) in view of Matsumoto (JP 2002-030208-English translation included).

Ueda discloses biodegradable polyester resin compositions. Said composition comprises 0.01-10 pts mass of methacrylic esters, such as glycidyl methacrylate [0013], or a crosslinking agent, and 0.05-30 pts mass layered silicate. The biodegradable polyester resin may be polylactic acid or a copolymer thereof [0008]. The composition is used for foams (abstract).

Ueda does not disclose end-capping the polyester resin. Matsumoto discloses polylactic acid resin compositions. The carboxylic acid end groups of said composition are blocked (abstract). The blocking agent may be a carbodiimide, an epoxy, an oxazoline and the like [0015]. Blocking the carboxylic endgroups results in a composition having higher heat resistance and hydrolysis resistance (abstract). Use of 0.72, 0.56 and 1.00 wt% of the blocking agent is disclosed in Examples 1, 3 and 4 respectively.

It would have been obvious to one of ordinary skill in the art at the time of the invention to include in Ueda the technique of blocking the polylactic resin with carbodiimides and the like, as taught by Matsumoto, in order to increase the heat and hydrolysis resistance of the resin, thusly meeting all the requirements of Claims 1-5 and 7-11.

6. Claims 1, 2, 3, 4 and 7-10 rejected under 35 U.S.C. 103(a) as being unpatentable over Kubo (JP 2000-017037- English translation included) in view of Matsumoto.

Kubo discloses expandable resin compositions. Said compositions comprise a D-L-lactic acid copolymer and 0.5-5 wt% of an isocyanate crosslinking agent (abstract). The composition is used for foamed articles [0007].

Kubo does not include the use of blocking agents for his composition. Matsumoto discloses polylactic acid resin compositions. The carboxylic acid end groups of said composition are blocked (abstract). The blocking agent may be a carbodiimide, an epoxy, an oxazoline and the like [0015]. Blocking the carboxylic endgroups results in a composition having higher heat resistance and hydrolysis resistance (abstract). Use of 0.72, 0.56 and 1.00 wt% blocking agent is disclosed in Examples 1, 3 and 4 respectively.

It would have been obvious to one of ordinary skill in the art at the time of the invention to include in Kubo the technique of blocking the polylactic resin with carbodiimides and the like, as taught by Matsumoto, in order to increase the heat and hydrolysis resistance of the resin, thusly meeting all the requirements of Claims 1-4 and 7-10.

7. Claim 6 rejected under 35 U.S.C. 103(a) as being unpatentable over Ueda and Matsumoto, or Kubo and Masumoto, in view of Miyamoto.

Ueda and Matsumoto include elements of the invention as set forth above. Ueda and Matsumoto do not include the mixing/reacting steps of the composition. Miyamoto includes elements as set forth above. Miyamoto discloses first endcapping the polyester and then mixing it with the crosslinking agent. End-capping the polyester prior to mixing it with the crosslinking agent minimizes cross-reactions between the blocking agent and the crosslinking agent and maximizes the amount of blocking on the polyester. Increasing the blocking conversion increases the heat and hydrolysis resistance and decreasing the cross-reactions increases the homogeneity of the final product.

It would have been obvious to one of ordinary skill in the art at the time of the invention to include in Ueda and Matsumoto the step of blocking the polyester before mixing the compositon with the crosslinking agent, as taught by Miyamoto, in order to increase the heat resistance, hydrolysis resistance and homogeneity of the composition.

8. Claims 5 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kubo in view of Kitazono.

Kubo include elements of the invention as discussed above. Kubo does not include the use of a layered silicate in the composition.

Kitazono discloses biodegradable polyester material blended with layered silicates (abstract). The biodegradable polyester may be polylactic acid [0008]. Inclusion of the layered silicate improves the gas barrier properties of the composition (abstract and [0005]).

It would have been obvious to one of ordinary skill in the art at the time of the invention to include in Kubo the use of layered silicates, as taught by Kitazono, in order to improve the gas barrier properties of the composition, meeting the requirements of Claims 5 and 11.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alicia M. Toscano whose telephone number is 571-272-2451. The examiner can normally be reached on Monday to Friday 8:30 AM to 5 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski can be reached on 571-272-1302. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AMT

RANDY GULAKOWSKI
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700